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Title: PROCESSOR AND METHOD FOR WEIGHT DETECTION IN A CLOSED LOOP DIVERSITY MODE WCDMA SYSTEM

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## IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method to detect a final weight-set to process a spread spectrum channel comprising:

determining a measurement probability for an initial weight-set from a group of predetermined weight-sets from measurements of a current time-slot;

determining a transition probability for the initial weight-set, the transition probability based at least on a change from a previously requested weight-set;

calculating a weight-set metric for the initial weight-set based at least on the measurement probability, and the transition probability probabilities and a prior weight-set metric; and

detecting the final weight-set from the group of predetermined weight-sets based at least on the weight-set metric to process the current time-slot.

2. (Previously Presented) The method of claim 1 further comprising using the detected final weight-set to combine multipath components of the current time-slot.

3. (Currently Amended) The method of claim 1 wherein the weight-set metric is a weight-set metric for a current node of a trellis of nodes, and wherein calculating the weight-set metric comprises:

calculating, for branches of the trellis leading to the current node, a branch metric based at least on the measurement probability and the transition probability probabilities;

calculating node metrics for the current node based at least on the branch metric of a branch leading to the current node and a metric of a prior node connected by the branch leading to the current node; and

selecting a greatest of the node metrics for the current node to correspond with the weight-set metric for the current node.

4. (Currently Amended) The method of claim 3 wherein ~~nodes of the trellis correspond with weight sets of the group of predetermined weight-sets~~ corresponds to nodes of the trellis.

5. (Previously Presented) The method of claim 3 wherein the selecting comprises selecting a node from a plurality of nodes of the trellis having the greatest weight-set metric, each node of the plurality corresponding with one weight-set of the group of predetermined weight-sets.

6. (Currently Amended) The method of claim 1 wherein prior to the determining the measurement probability, the method comprises selecting the initial weight-set from the group of predetermined weight sets, and

wherein includes determining the measurement probability is determined for each weight-set of the group of predetermined weight-sets based at least on received amplitude and phase measurements of the current time-slot.

7. (Currently Amended) The method of claim 1 wherein the determining the measurement probability for the initial weight-set further comprises estimating a probability for each weight-set of the group of predetermined weight-sets for the current time-slot by measuring received pilot symbols of a dedicated physical channel (DPCH) and a continuous pilot channel (CPICH) of the current time-slot.

8. (Original) The method of claim 1 wherein the group of predetermined weight-sets include at least one of the weight-sets used by a base station in transmitting the current time-slot in diversity mode.

9. (Previously Presented) The method of claim 1 wherein the transition probability is determined from a probability that a the initial weight-set was changed from other weight-sets of the group of predetermined weight-sets and based at least on feedback previously provided by a receiver to a transmitter.

10. (Original) The method of claim 9 wherein the feedback is comprised of at least one feedback bit previously transmitted by a mobile unit for use by a base station in transmitting the current time-slot.

11. (Previously Presented) The method of claim 1 further comprising determining channel taps from the final weight-set for use in combining multipath components of a channel during the current time-slot.

12. (Currently Amended) The method of claim 1 wherein the initial weight-set and the final weight-set weight-sets comprise weights, and each weight of the weight sets has having a phase and amplitude component.

13. (Currently Amended) The method of claim 1 further comprising repeating the determining of the measurement probability and the transition probability probabilities, calculating the weight-set metric and detecting the a next final weight-set for a next time-slot, wherein the determining of the transition probability uses the weight-set metrics from the current time-slot as a prior time-slot in the next time-slot.

14. (Currently Amended) A processor comprising:  
a weight selection element to select an initial weight-set from a group of predetermined weight sets;

a metrics calculation element to determine a measurement probability for a the initial weight-set from measurements of a current time-slot, to determine a transition probability for the initial weight-set, the transition probability based at least on a change from a previously requested weight-set, and to calculate a weight-set metric for the initial weight-set based at least on the measurement probability, and the transition probability probabilities and a prior weight-set metric; and

a weight detection element to select a final weight-set from a the group of predetermined weight-sets based at least on the weight-set metric to process the current time-slot.

15. (Currently Amended) The processor of claim 14 wherein the weight-set metric is a weight-set metric for a current node of a trellis of nodes,

wherein the metrics calculation element calculates for branches of the trellis leading to the current node, a branch metric based at least on the measurement probability and the transition probability probabilities,

wherein the metrics calculation element further calculates node metrics for the current node based at least on the branch metric of a branch leading to the current node and a metric of a prior node connected by the branch leading to the current node, and

wherein the weight detection element selects a greatest of the node metrics for the current node to correspond with the weight-set metric for the current node.

16. (Original) The processor of claim 14 wherein the metrics calculation element determines the measurement probability for each weight-set of the group of predetermined weight-sets based at least on received amplitude and phase measurements of the current time-slot.

17. (Currently Amended) The processor of claim 14 wherein the metrics calculation element determines the measurement probability by estimating a probability for each weight-set of the group of predetermined weight-sets for the current time-slot by measuring received pilot symbols of a dedicated physical channel (DPCH) and a continuous pilot channel (CPICH) of the current time-slot.

18. (Currently Amended) The processor of claim 14 wherein the metrics calculation element determines the transition probability from a probability that [[a]]the initial weight-set was changed from other weight-sets of the group of predetermined weight-sets and based at least on feedback previously provided by a receiver to a transmitter.

19. (Currently Amended) A machine readable medium having program instructions stored thereon for performing a method of processing spread spectrum channels when executed within a digital processing device by, the method comprising:

selecting an initial weight-set from a group of predetermined weight sets;

determining a measurement probability for [[a]]the initial weight-set from measurements of a current time-slot;

determining a transition probability for the initial weight-set, the transition probability based at least on a change from a previously requested weight-set;

calculating a weight-set metric for the initial weight-set based at least on the measurement probability, and the transition probability, probabilities and a prior weight-set metric; and

detecting a final weight-set from [[a]]the group of predetermined weight-sets based at least on the weight-set metric to process the current time-slot.

20. (Currently Amended) The machine readable medium of claim 19 wherein the weight-set metric is a weight-set metric for a current node of a trellis of nodes, and wherein calculating the weight-set metric comprises:

calculating, for branches of the trellis leading to the current node, a branch metric based at least on the measurement probability and the transition probability probabilities;

calculating node metrics for the current node based at least on the branch metric of a branch leading to the current node and a metric of a prior node connected by the branch leading to the current node; and

selecting a greatest of the node metrics for the current node to correspond with the weight-set metric for the current node.

21. (Original) The machine readable medium of claim 19 wherein determining the measurement probability includes determining the measurement probability for each weight-set of the group of predetermined weight-sets based at least on received amplitude and phase measurements of the current time-slot.

22. (Currently Amended) The machine readable medium of claim 19 wherein determining the measurement probability for the weight-set further comprises estimating a probability for each weight-set of the group of predetermined weight-sets for the current time-slot by measuring received pilot symbols of a dedicated physical channel (DPCH) and a continuous pilot channel (CPICH) of the current time slot.

23. (Original) The machine readable medium of claim 19 wherein the transition probability is determined from a probability that a weight-set was changed from other weight-sets of the group of predetermined weight-sets and based at least on feedback previously provided by a receiver to a transmitter.

24. (Currently Amended) A code division multiple access (CDMA) receiver comprising: a dedicated channel measurement element to measure characteristics of current time slots of a CDMA channel;

a weight selection element to select an initial weight-set from a group of predetermined weight sets;

a metrics calculation element to calculate metrics for the initial weight-sets estimated to have been used in transmitting each of the current time slots, the metrics calculated from the measured characteristics of the current time slots;

a weight detection element to select a final weight-set from [[a]]the group of predetermined weight-sets based at least on the metrics for the initial weight-sets; and

a channel tap calculator to generate channel taps from the selected final weight-set.

25. (Currently Amended) The CDMA receiver of claim 24 wherein the metrics calculation element calculates metrics for the initial weight-sets based at least on a measurement probability for each the initial weight-set from the measured characteristics of one of the current time-slots, and

wherein the metrics calculation element calculates a transition probability for the initial weight-set, wherein the transition probability is based at least on a change from a previously requested weight-set.

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27 26. (Previously Presented) The CDMA receiver of claim 24 further comprising:  
a pilot channel measurement element to measure the CDMA channel; and  
a weight selection element to select a channel weight-set from a pilot channel  
measurement, wherein the weight selection element provides feedback to a transmitter based at  
least on the selected channel weight-set for use in subsequent transmissions to the CDMA  
receiver by the transmitter.

28 27. (Previously Presented) The CDMA receiver of claim 24 further comprising:  
despreaders to despread received spread spectrum signals with spreading codes; and  
a rake receiver to weigh and combine multipath components of the received spread  
spectrum signals using the channel taps provided by the channel tap calculator.

26 28. (Currently Amended) The CDMA receiver of claim 25 wherein each of the metrics  
for weight-sets is a weight-set metric for a current node of a trellis of nodes, and wherein the  
metrics calculation element calculates the metrics for weight-sets by calculating, for branches of  
the trellis leading to the current node, a branch metric based at least on the measurement and  
transition probabilities, and calculating node metrics for the current node based at least on the  
branch metric of a branch leading to the current node and a metric of a prior node connected by  
the branch leading to the current node, and

and wherein the weight detection element selects a greatest of the node metrics for the  
current node to correspond with the weight-set metric for the current node.

29. (Previously Presented) The CDMA receiver of claim 24 wherein the dedicated  
channel measurement element, the metrics calculation element, the weight detection element,  
and the channel tap calculator are functional elements of a processor.